Submission No 5

INQUIRY INTO HEAVY VEHICLE SAFETY AND USE OF TECHNOLOGY TO IMPROVE ROAD SAFETY

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Enquiry into Heavy Vehicle Safety and Use of Technology to Improve Road Safety

Submission to the NSW Parliament

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SUSTAINABLE CERTIFICATION
ISO 9001
AS/NZS 4801
ISO 14001
Endorsed
Integrated Management System

Contents

1. Introduction

The Joint Standing Committee on Road Safety (the Staysafe Committee) is conducting an inquiry into heavy vehicle safety and the use of technology to improve road safety, and has requested input from interested parties. As a transport company with 467 units operating throughout the State of NSW, and over 2400 nationally, J.J. Richards & Sons Pty Ltd (JJR) are committed to the safety of our drivers and fleet, and are continually looking for ways to improve heavy vehicle safety.

In response to the Terms of Reference provided by the Staysafe Committee, provided in the following submission are details of some of the initiatives JJR have implemented to improve heavy vehicle safety to date, as well as some that we are currently investigating.

2. Fatigue/Distraction Monitoring Equipment

JJR are investigating the use of "Seeing Machines" for long distance operations, as we believe they will make a significant contribution towards reduction of fatigue/distraction events. These systems involve in-cab driver sensors (using face and eye tracking algorithms) and forward facing cameras to detect symptoms of fatigue and alert the affected driver, preventing an incident from occurring. This particular system also has 24/7 monitoring for increased effectiveness.

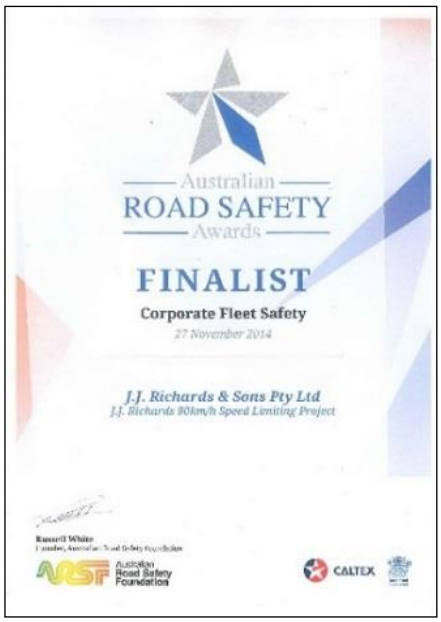
Please refer to Attachment A for further information. They also have a website: https://www.seeingmachines.com/industry-applications/fleet-guardian/

3. Speed Limiting of Vehicles

J.J. Richards was one of four finalists in the 2014 Australian Road Safety Awards under the category of Corporate Fleet Safety. Our entry in the awards was though a project resulting in the speed limiting of our entire heavy vehicle fleet to a **maximum 90 kilometres per hour**.

As a family owned waste management company with over 85 years in the transport industry, the safe management of our fleet of over 2,400 units is of the utmost importance.

To achieve this, we have robust training programs for our driving staff combined with strict compliance requirements and monitoring. We also have a highly skilled and dedicated team of Fleet Management professionals and workshop staff to ensure we maintain our fleet to the highest standards, which exceed those prescribed by relevant authorities and manufacturer's specifications and guidelines.



Benefits include:

- Slower speed: shorter stopping distances required, further away from the vehicle's dynamic limit, more time to identify and react to dangers ahead.
- Reduces the opportunity for heavy vehicles to intimidate other road users.
- Reduces fuel burn.
- Widely adopted practice in Europe, Japan, NZ and some freeways in Victoria

4. Active Safety Equipment on New Vehicles

When selecting the supplier for our next generation of heavy vehicles, one of the highest priority considerations were the safety features, as well as commitment to environmental sustainability and vehicle operational efficiency. This led JJR to select Volvo as our preferred supplier.

Outlined below are some of the safety features that we believe should be mandatory for all heavy vehicles:

4.1 Lane Keeping Support (LKS)

Lane Keeping Support alerts the driver during unintentional deviation from the driving lane. Please refer to Attachment B for further information.

4.2 Collision Warning with Emergency Braking

Heavy Vehicles are required to interact with significant volumes of traffic on a daily basis. Often other vehicles become frustrated and/or think they can "fit in" between a heavy vehicle and the vehicle in front, significantly reducing braking distances. Forward collection warning with emergency braking can assist heavy vehicle drivers in this regard, by providing an audio and visual collision warning, reducing the risk of accidents occurring.

JJR have selected Volvo as our preferred supplier as they are able to provide these warning systems in the vehicles that are offered to us.

Please refer to Attachment C for further information.

4.3 Electronic Stability Packages

Electronic Stability Packages help prevent skidding and roll over of heavy vehicles. The system allows for swift responsiveness and allows for the distribution of braking force across the vehicle's brakes to maintain stability in difficult driving conditions.

JJR have selected Volvo as our preferred supplier as this is a standard feature in all of their models.

Please refer to Attachment D for further information.

4.4 Daytime Running Lights

The Daytime Running Light feature makes the heavy vehicle more visible which improves safety.

Please refer to Attachment E for further information.

5. j-Track / Telematics

JJR has designed and implemented an in truck computer system called j-Track® which is used to monitor and optimise collection vehicle performance and record important service information for each daily run. While such systems are available from external suppliers, we decided to invest in developing our own system so it can easily be customised to meet our changing information needs and those of the customers that we service.

The j-Track® system provides numerous benefits to the company including:

- Drivers run navigation to ensure consistent service times.
- An accurate record of compliance with driving regulations including compulsory rest breaks and legal loading (as per Chain of Responsibility requirements).
- Stream recording of all vehicles movements via a forward facing camera on the windshield of the cab and the reversing camera. The footage can be used to identify and address any dangerous practices that drivers may exhibit, including tailgating.
- Compliance with all site road rules. If there is a suspicion that road rules i.e. speed limits have been violated, the console provides the tools for J.J. Richards' operations staff or managers to review vehicle movements and recorded speeds in detail.
- Speeding is monitored in the collection vehicle by the GPS navigation system in j-Track® and the driver receives an audible reminder if travelling over the speed limit.

6. Bluetooth Enabled Vehicles

JJR believe that all commercial vehicles be Bluetooth enabled, so that drivers are more likely to engage in compliant mobile phone use.

7. Load Monitoring Devices

A current waste industry practice is to use pressure gauges to monitor loads and reduce the possibility of overloads. This is relatively successful but not 100% fail-safe. JJR are investigating the fitting of load monitoring devices to our vehicles which will provide more accurate information to drivers and reduce the possibility of overloads.

8. The role of compliance and enforcement in maintaining the safety of heavy vehicles on our roads

Poor vehicle condition may be a function of:

- Budgetary restraints as a result of tiny margins,
- Delegation of maintenance to third parties like dealers (followed by little or no quality checking and scrutiny of the work),
- General lack of commitment, understanding and knowledge by vehicle owners.

We believe that to combat this decline requires the maintenance of a compliance and enforcement framework at a government level.

A compliance strategy could include the requirement for all companies to hold a “License” to own and operate heavy vehicles. A licence that requires them to demonstrate that they are adequately educated and understand their obligations and that if they do not comply that the licence can be revoked.

9. Conclusion

J.J. Richards is committed to maintaining the high standard of our fleet and continually investigating new opportunities, which could further improve health and safety within the heavy vehicle transport industry. We hope that the information submitted provides some areas for further investigation/discussion, and are happy to be involved in any further discussions regarding this important topic.

All initiatives outlined may not be feasible for each and every type of heavy vehicle, but where risks are identified to be high, they could prove worthwhile.

Attachment A – Guardian Seeing Machines


GUARDIAN
PREVENT. PROTECT.
IMPLEMENTATION
OPTIONS FOR
GUARDIAN

OPTIONS | OVERVIEW

Four Options covered with varying degrees of commitment and pricing

1. Standard Purchase
2. Proof of Concept & 100+ Deployment
3. Proof of Concept & 500+ Deployment
4. Proof of Concept, Co-Development & Deployment (800+)

Current Guardian offering included in all options as a minimum (Option 4 allows for further integration & development input)

Current Guardian offering includes Licensing, 24/7 Support & 24/7 Monitoring

Seeing Machines will appoint an Operations Manager to work with Customer to ensure the final solution is suitably integrated into the business.

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OPTION 1 | STANDARD PURCHASE

Hardware – $1,440 per unit

Licencing, 24/7 Monitoring & Support – $80 per month (36 month contract)

Installation – $500 per system or Customer technicians trained to complete installs ($1,500 per day for training)

DEPLOYMENT – 5+ SYSTEMS

Units installed into vehicles as requested across any sites / depots / BU's)

Setup of new sites in Database

Develop Fatigue Intervention Plan for each site / depot / BU

Includes Licensing, 24/7 Support & 24/7 Monitoring

Change Management support per site

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OPTION 2 | PROOF OF CONCEPT & 100+ DEPLOYMENT

PHASE 1 – Contract with KPI's

$5,000

PROOF OF CONCEPT

- 5 units installed
- 4 week duration
- 2 weeks silent alarms
- 2 weeks active phase plus 24/7 intervention
- Technician training
- Basic Change Management

PHASE 2 – Deploy following meeting KPI's

$120 per unit per month (36 months) + Installation

DEPLOYMENT – 100+ SYSTEMS

- 100+ units installed (multiple sites / depots / BU's)
- Project Plan developed and delivered prior to implementation
- Develop Fatigue Intervention Plan for each site / depot / BU
- Includes Licensing, 24/7 Support & 24/7 Monitoring
- Technician training options by site
- Change Management Training per site

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OPTION 3 | PROOF OF CONCEPT & 500+ DEPLOYMENT

PHASE 1 – Contract with KPI's

$5,000

PROOF OF CONCEPT

- 5 units installed
- 4 week duration
- 2 weeks silent alarms
- 2 weeks active phase plus 24/7 intervention
- Technician training
- Basic Change Management

PHASE 2 – Deployment following meeting KPI's

$99 per unit per month (36 months) + Installation

DEPLOYMENT – 500+ SYSTEMS

- 500+ units installed (multiple sites / depots / BU's)
- Project Plan developed and delivered prior to implementation
- Develop Fatigue Intervention Plan for each site / depot / BU
- Includes Licensing, 24/7 Support & 24/7 Monitoring
- Technician training options by site
- Change Management Training per site

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OPTION 4 | PROOF OF CONCEPT, CO-DEVELOPMENT & DEPLOYMENT (800+)

PHASE 1 – No Contract

PHASE 2 – Contract with staged payments to meet gateways & KPI's

$5,000

$72 per truck per month over 36 months

PROOF OF CONCEPT → ASSESSMENT – 80 SYSTEMS → INTEGRATION → DEPLOYMENT – 720 SYSTEMS

5 units installed

4 week duration

2 weeks silent alarms

2 weeks active phase plus 24/7 intervention

Technician training

Basic Change Management

80 units installed for immediate Assessment (with standard delivery items)

Requirements defined for Product & Integration

Integration with preferred telematics & other Customer business systems

Includes Licensing, 24/7 Support & 24/7 Monitoring

Define Project Gateways with Exit Clauses

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OPTION 4 | CONTINUED

PHASE 2 – Contract

Payment staged to align with project gateways

Exit clauses available at each gateway based on KPI's

Final delivered system will be custom designed, fully integrated Customer specific solution

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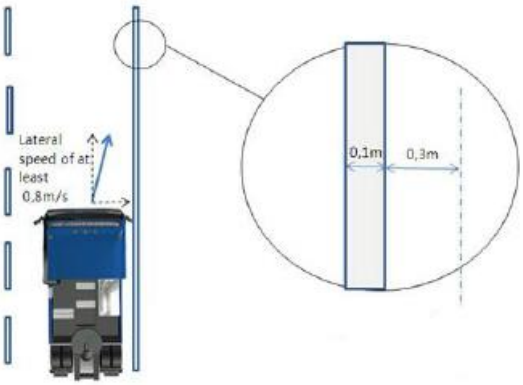
ANNEX | CURRENT GUARDIAN FEATURE LISTING

Seeing Machines Guardian - Features Listing		
Hardware	Computer	Processing algorithms, relaying data, storing Black Box footage
	Infrared Pods	Illuminating cab to allow night vision and ability to see through dark glasses
	Camera	Camera tracks face, built in test button to include system test into pre-start check, LED light to indicate errors. Built in buzzer to alert driver when event occurs
	GPS, WiFi & 3G Antenna	Enable connectivity, GPS tracking, event location, GPS used to track vehicle speed, connect via WiFi or 3G
	Vibration Alert Motor	Vibration alert is connected to seat to alert driver once an event is triggered. Configurable by event type.
	Forward Facing Camera	Onboard accelerometer to trigger events. Captures road view footage and sends to Computer via WiFi. Configurable which footage to be sent according to event type.
Triggered Event Types	Eye Closure	Eye closure events trigger when the eyes close for a period of 1.5seconds+ while the vehicle is traveling faster than 5kmh
	Head Rotation	Head rotation captures attention off road events. If the operator looks outside of a defined field of view for a x seconds over x speed and event is triggered.
	Accellerometer	G-Force thresholds are triggered on the x, y and z axis to trigger multiple event types.
Event Classification	Eye Closure	Microsleep, Drowsy, Controlled Eye Closure, Praying, Sneezing, Yawning, singing
	Head Rotation	Distraction event, glance away, glance down
	Accellerometer	Heavy Breaking, Harsh Cornering, Vehicle Impact
	GPS Based Events	Overspeed set up using maximum speed threshold
	Other	Other behaviour seen in any event type can be added to classification. Smoking, Mobile Phone Use, Reading, No Seatbelt (limited by field of view)
	Custom	Potential to add customisable event types to be classified if behaviour is seen in footage - non standard
	Web Interface	Can be viewed on computer or smartphone. Locked down by username / site specific / role specific credentials

ANNEX | CURRENT GUARDIAN FEATURE LISTING CONT.

Seeing Machines Guardian - Features Listing (cont.)		
Communication	WiFi	WiFi can be enabled if there is on board WiFi capability
	3G	SIM card slot enables 3G connectivity (preferred)
	Ethernet	Ethernet can be used to connect to a monitor for programming the unit or to connect to an onboard router for communication
Off Site Infrastructure & Services	Cloud Database	Database is stored in a cloud database to enable easy access and unlimited storage by the customer
	24/7 Ticketed Support	Phone & Email support available 24/7 included in cost
	24/7 Monitoring Centre	Real Time classification of all events and follow up according to defined intervention plan. Phone call to site contact usually within 2 minutes of event occuring in cab.
	Reporting Team	Daily, Weekly & Monthly reports sent by site to defined contacts
	Web Interface	Can be viewed on computer or smartphone. Locked down by username / site specific / role specific credentials
Web Interface	Fleet View	View fleet listing, GPS location, fleet diagnostic errors, events by truck
	Alert View	View events across entire fleet, search by date, view video, GPS location, diagnostic information
	Dispatch console	View Fleet dashboard with split by trucks not communicating, communicating, at risk (1 event), high risk (2 events)
	Timeline View	View overview of fleet by timeline with event overlays
Black Box	Storage	Stores ~24hours of looped footage locally on the Guardian computer. After a catastrphic event has occurred, data can be manually extracted from the unit if pulled within 24 hours.
	Extraction	Seeing Machines Support can decrypt the footage and provide it to customer alongside accellerometer data

Attachment B – Lane Keeping Support



Camera in the upper centre area of the windscreen.

The Lane Keeping Support system (LKS) is a drive support system with the task to alert the driver during unintentional deviation from the driving lane.

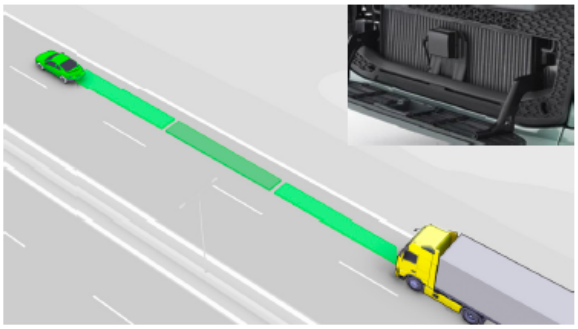
The system alerts where unintentional deviations from the lane can result in accidents. The system uses a camera positioned in the upper centre area of the windscreen to alert the driver with an acoustic signal from the speakers.

The LSS-DW shall warn at the latest when the outside of the tire of the vehicle's front wheel (closest to the lane markings) crosses a line 0.3 m beyond the outside edge of the visible lane marking to which the vehicle is being drifted (see picture).

The system operates in speeds from 60 km/h and can be activated/deactivated with a switch in the dashboard.

Active system. Inactive system.

Attachment C – Forward Collision Warning with Emergency Braking



Forward collision warning with emergency braking - HWSS-FCB

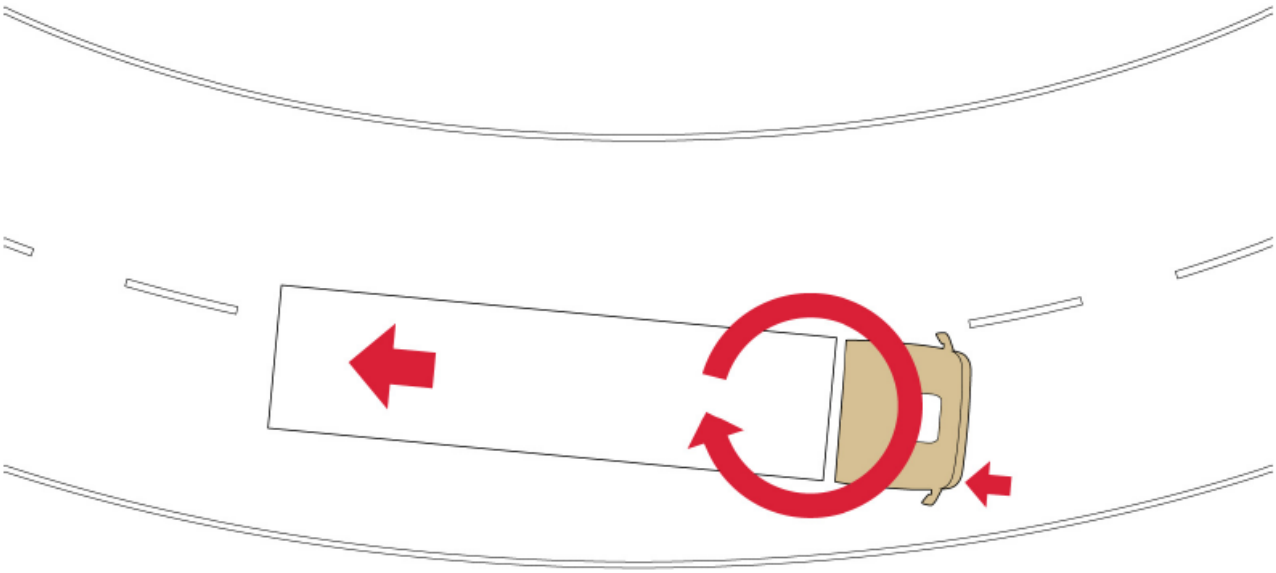
The HWSS-FCB variant includes forward collision warning. The system alerts the driver at the risk of a collision with the vehicle ahead. If risk of collision is imminent the vehicle brakes will be applied automatically. The warning consists of a tell tale in the instrument cluster that will be lit and an acoustic signal from the instrument cluster.

HWSS-FCB uses both the radar and a camera to collect information. The function is activated each time the vehicle is started and is available at speeds above 15 km/h.

FEATURES AND BENEFITS

- Reduces risk of accidents and collisions.
- Audio and visual collision warning.
- Fulfills UN/ECE requirements.

Attachment D – Electronic Stability Packages



Electronic Stability Programme Package

Electronic Stability Programme Package, ESP-BAS1, is one of the most important safety features and is standard for all truck specifications. The programme helps preventing skidding and rolling over.

ESP provides more stable braking while making it possible to distribute the braking force individually between the truck's wheel brakes and the service brakes on the trailer. The system is extremely fast-acting. The control unit continuously receives information from a wide variety of yaw rate sensors and makes a new evaluation of the driving situation several times per second. If the system detects that the truck is starting to lurch or behave abnormally in some other way, the ESP activates the brakes individually in order to straighten up the vehicle combination.

ESP brakes each wheel individually

In practice, ESP-BAS1 reduces engine torque and controls the truck's wheel brakes individually. The yaw control function helps maintaining direction stability in difficult driving conditions. The system also brakes the trailer, thereby providing stability for the entire vehicle combination and counteracting jack-knifing, rollover and trailer swing.

FEATURES AND BENEFITS

- ESP minimises the risk of of skidding and rolling over.
- ESP brakes each wheel on the truck individually.
- Increased traffic safety.

Attachment E – Daytime Running Lights

FACT SHEET

Day running light DRL-LED

V-shaped ("V-light") day running light (LED)

The Daytime Running Light is combined with the front position light using LED technology. When activated, the DRL has a distinct V-shape.

Two different options for DRL functions are available:
- UDRL (Daytime Running Light unactivated)
- DRL-LED (Daytime Running Light activated)

The variant DRL-LED is available on Volvo FL equipped with Euro 4 or Euro 5 engine and on Volvo FE with Euro 3, Euro 4 or Euro 5 engine.

The DRL-LED has functions as follows:
- When the engine is started, the DRL is functioning in full power. The light switch must be in position"0", this means no front and rear lights.
- If the dipped or main beam is activated, the DRL is dimmed.

Day Running Light – Volvo FL.

FEATURES AND BENEFITS

- Powerful LED light, makes the truck more visible, which increases safety.
- Distinct Volvo V-shape building the brand.
- Energy efficient LED light saves power.